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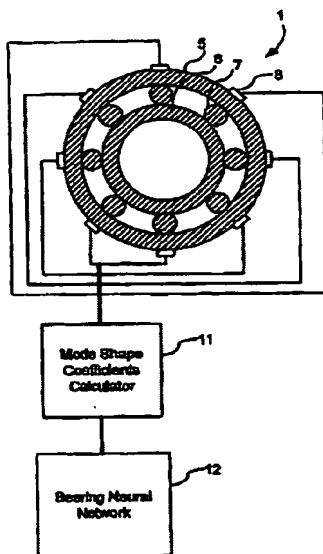
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(54) Title: METHOD AND SENSOR ARRANGEMENT FOR LOAD MEASUREMENT ON ROLLING ELEMENT BEARING  
BASED ON MODEL DEFORMATION

(57) **Abstract:** Method and sensor arrangement for determining a load vec-  
tor acting on a rolling element bearing (1) in operation. A plurality of N  
sensors (8) are provided which measure displacement and/or strain for de-  
termining displacement and/or strain in one of the elements (5, 6, 7) of the  
rolling element bearing (1). Furthermore, a mode shape coefficients calcu-  
lator (11) is provided, connected to the plurality of N sensors (8), for deter-  
mining a deformation of the element (5, 6, 7) by calculating amplitude and  
phase of N/2 Fourier terms representing at least one radial mode shape of the  
ring shape element (5, 6, 7). Also, a bearing neural network (12) is present,  
connected to the mode shape coefficients calculator (11), the bearing neural  
network (12) being trained to provide the load vector on the rolling element  
bearing (1) from the N/2 Fourier terms.



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